



# ***Public Information Meetings***

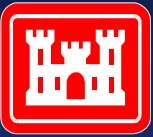
## ***Willamette Reservoir Operations for 2003***

*April 1, 2003 - Eugene*

*April 2, 2003 - Sweet Home*

*April 3, 2003 - Salem*

*April 9, 2003 - Detroit*



# ***Meeting Overview***

- ***Overview of the Willamette Reservoir System***
- ***Hydrologic Forecast for the rest of 2003***
- ***Planned 2003 Operating Criteria***
- ***Current Reservoir Conditions***
- ***Reservoir Elevations and Flow Forecasts***
- ***Answer questions/receive comments***

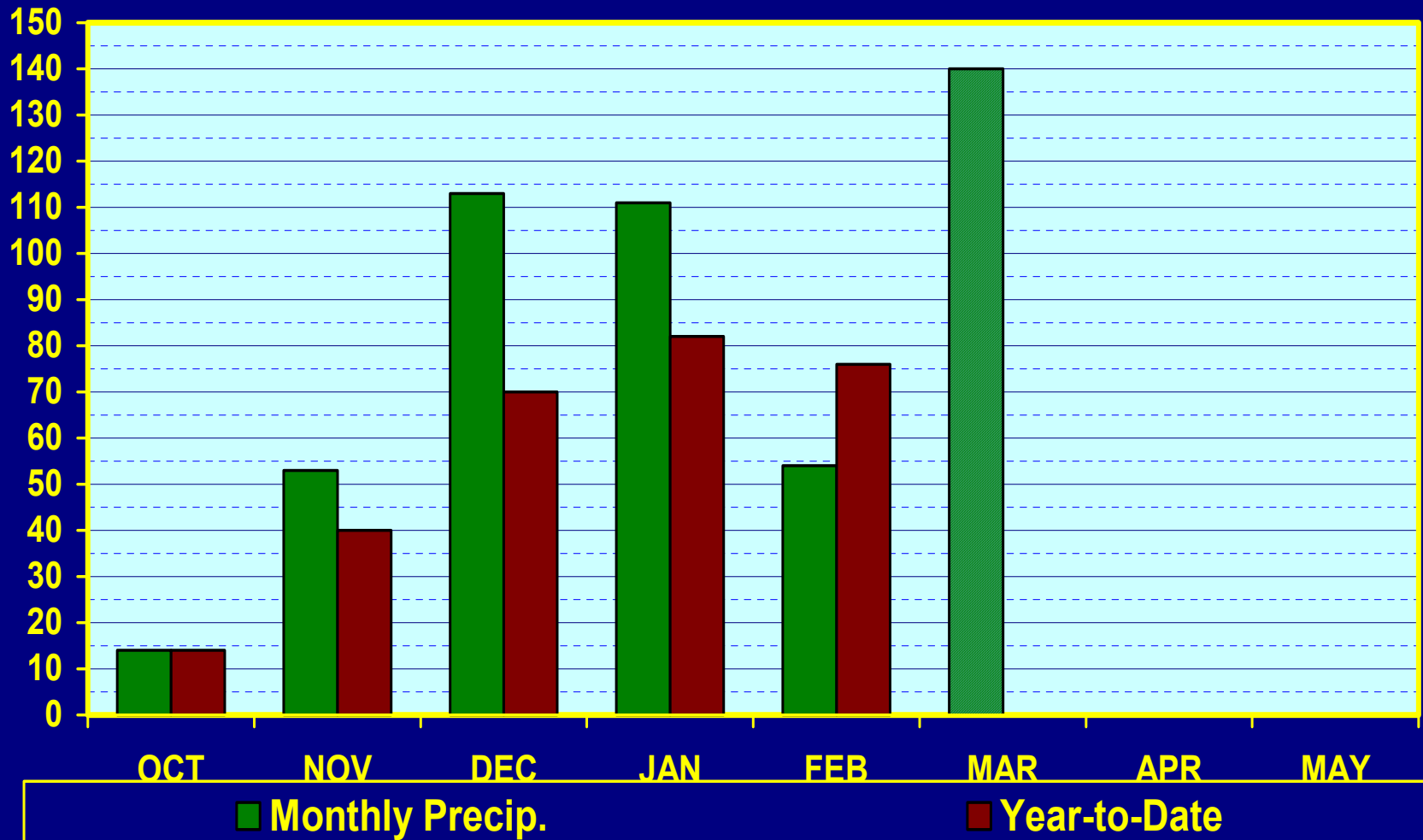


# ***Current Willamette Basin Hydrologic Conditions***



# ***NRCS – Reported Precipitation for W Y 2003***

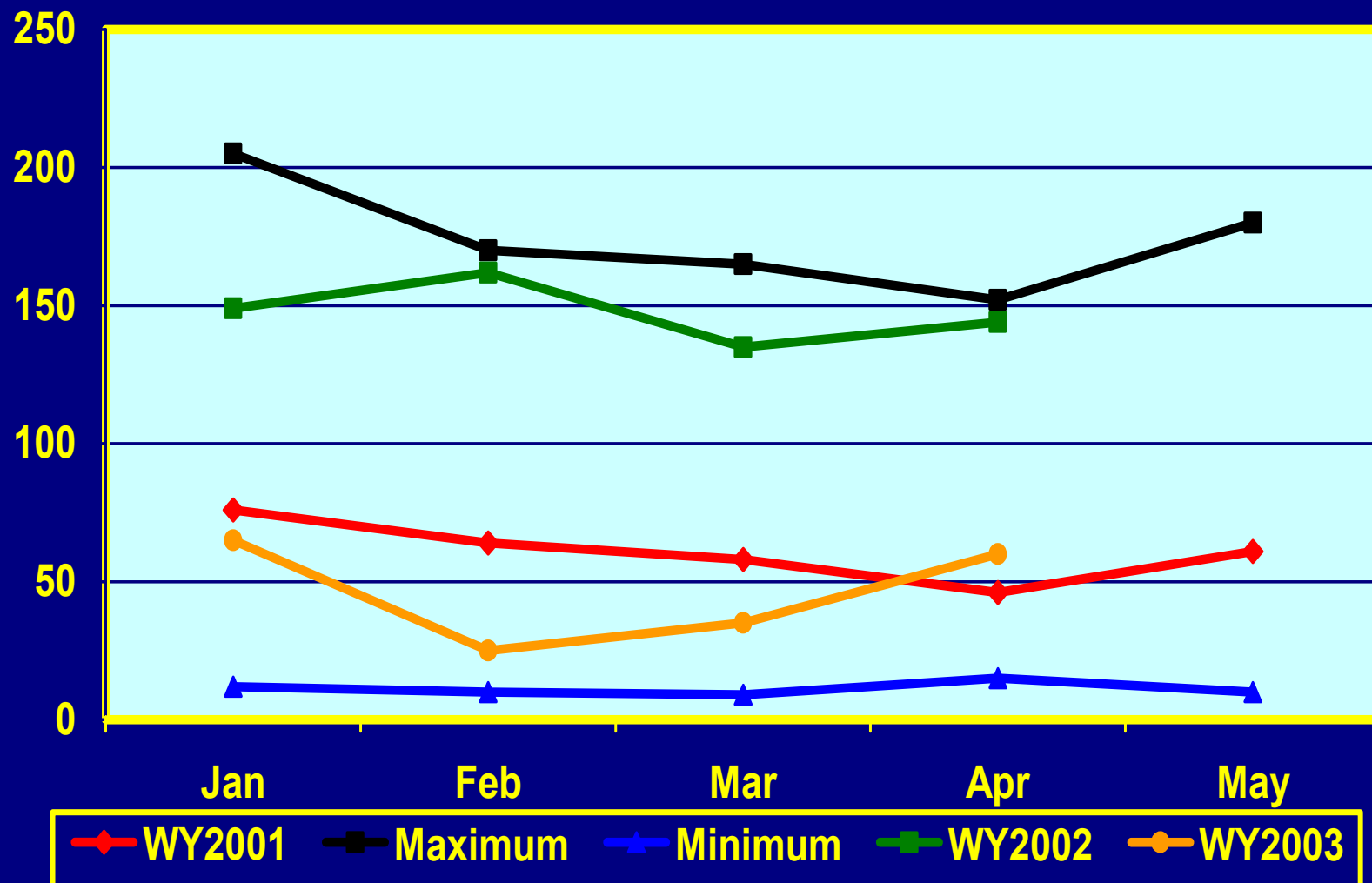
**( Percent of Normal - for Willamette Valley )**





# Current NRCS Snowpack

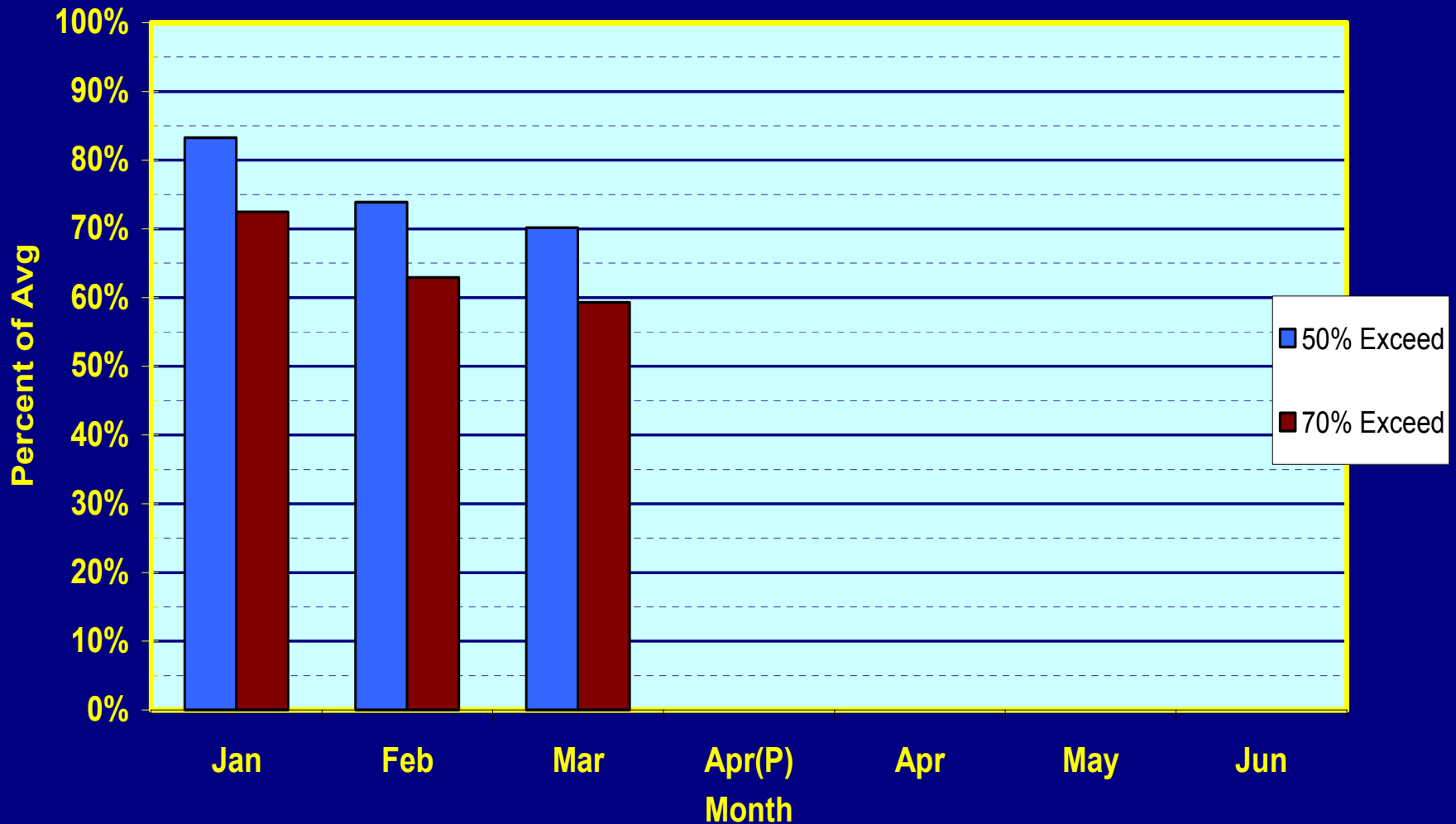
(Percent of Normal)

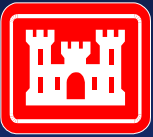




# ***NRCS Monthly Forecast – March 2003***

At Salem - Period of April thru September





# ***The Willamette Reservoirs -- System Overview***

- ***System description***
- ***Authorized project purposes***
- ***Rule curves***
- ***Operating criteria during the  
conservation season (Feb - Oct)***
- ***Special Operations***



# ***Willamette Basin Project, Oregon***

13 Dams and Reservoirs

- 11 multiple-purpose
- 2 reregulating

Over 100 Miles of Bank  
Protection works

Navigation Channel,  
Mouth to Corvallis  
(135 miles)

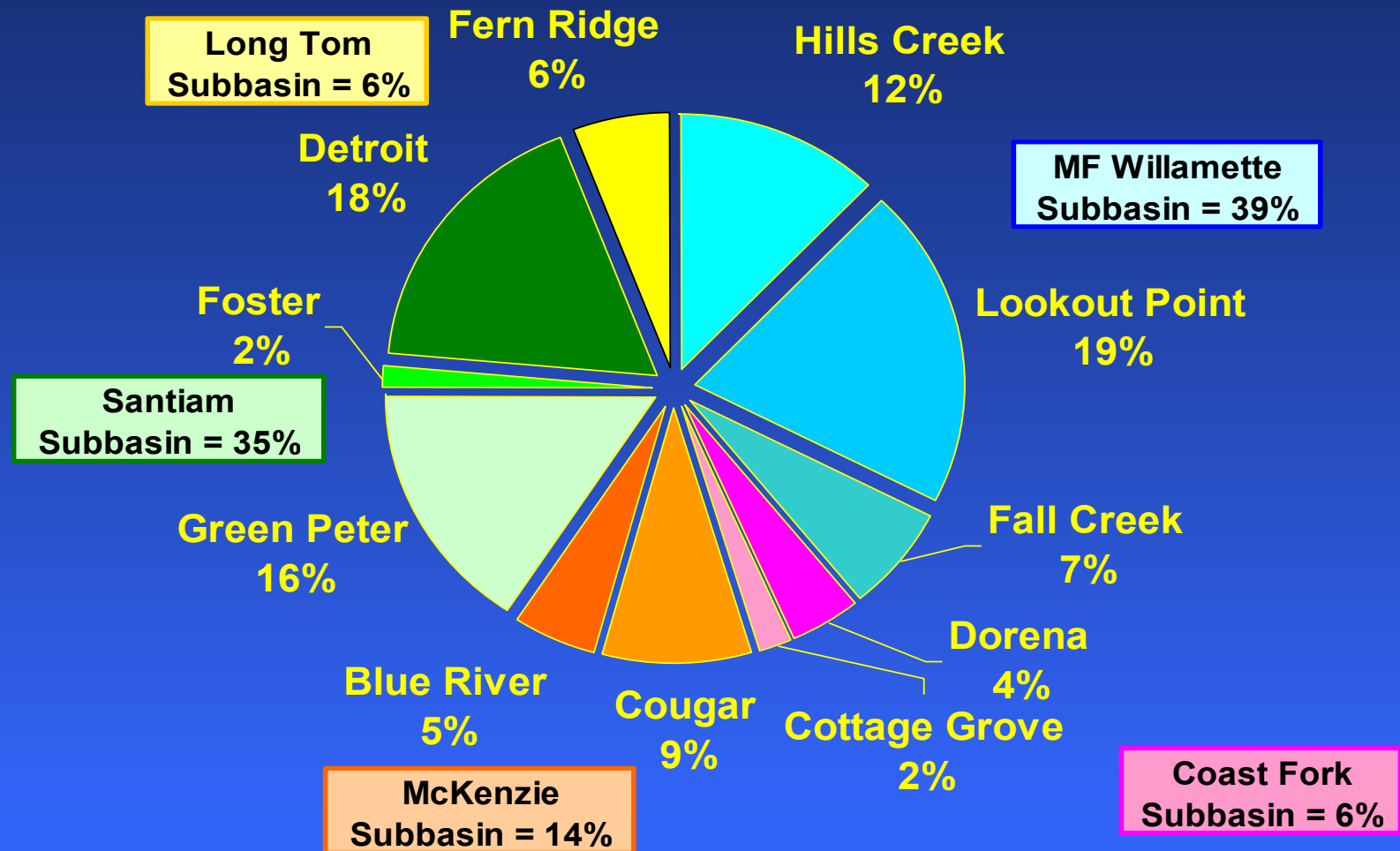






# Willamette Conservation Storage

*Total = 1.6 million Acre-feet*





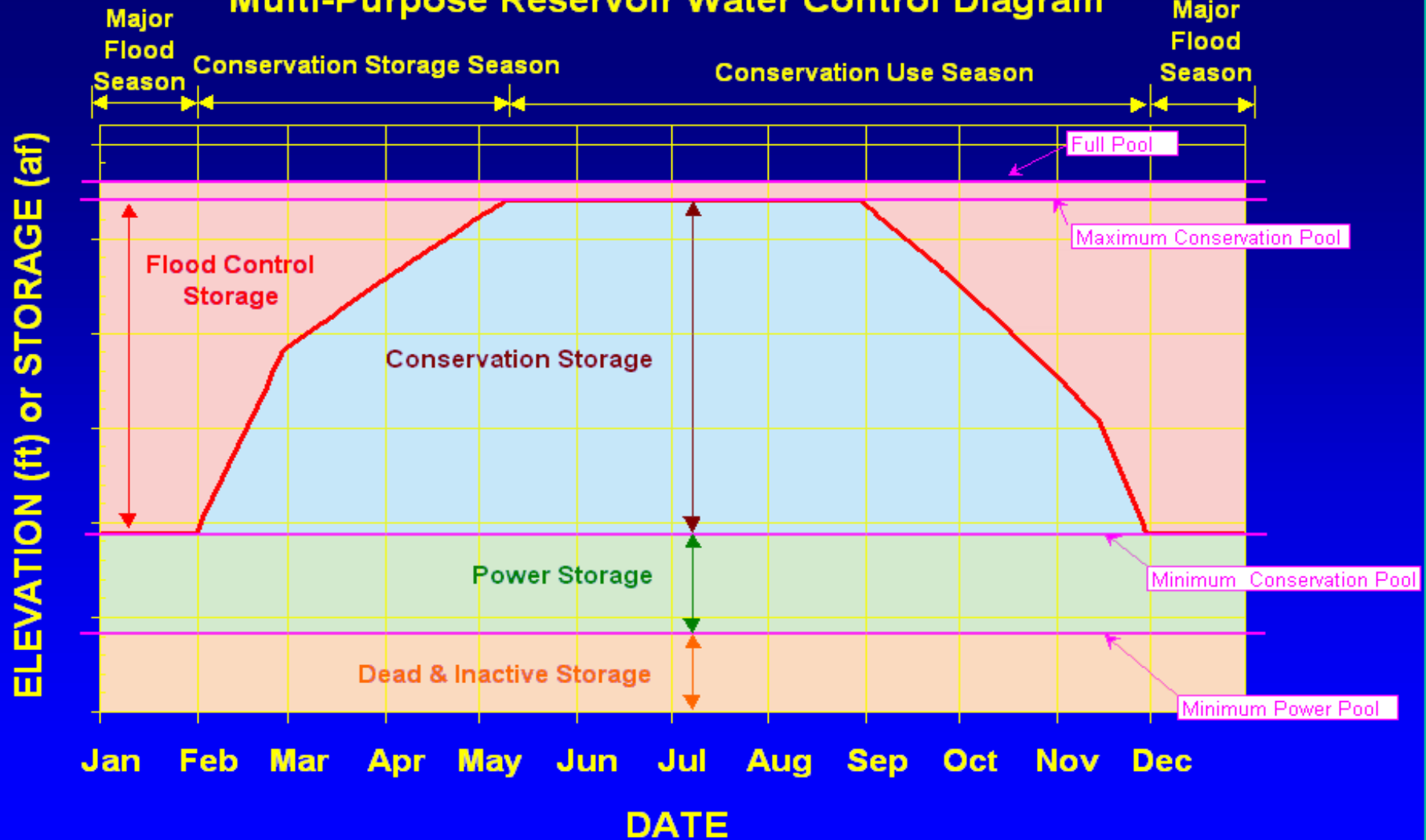
# *Authorized Purposes*

- *Flood Control*
- *Hydropower*
- *Navigation*
- *Irrigation*
- *Fish & Wildlife*
- *Recreation*
- *Water Quality*
- *Municipal & Industrial*





## Multi-Purpose Reservoir Water Control Diagram





# ***Willamette Reservoir Projects***

## ***Conservation Season Operating Criteria***

- ***Minimum Instream Flows***
- ***Spring Flow Augmentation; Apr - June***
- ***Mainstem Flow Augmentation; Jul - Oct***
- ***Water for Out-of-Stream Needs***
- ***Refill and Drawdown Priorities***
- ***Special Operations***



# *Minimum Tributary Flows for Instream Water Rights, Fish, Water Quality & Recreation*

*(July - October)*

● Hills Creek	400 cfs	● Blue River	50 cfs
● Lookout Point	1,000 cfs	● Fern Ridge	30 cfs
● Fall Creek	30 cfs	● Green Peter	50 cfs
● Cottage Grove	50 cfs	● Foster	750 cfs
● Dorena	100 cfs	● Detroit	<u>1000 cfs</u>
● Cougar	300 cfs*		

Total 3,810 cfs

\* No storage in Cougar Lake during temperature control construction, 2002-2004. Project will pass inflow.



# ***Willamette Reservoir Projects***

## ***Conservation Season Operating Criteria***

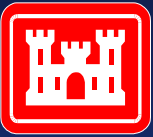
- ***Minimum Instream Flows***
- ***Spring Flow Augmentation; Apr - June***
- ***Mainstem Flow Augmentation; Jul - Oct***
- ***Water for Out-of-Stream Needs***
- ***Refill and Drawdown Priorities***
- ***Special Operations***



# ***Spring Fish Flow Augmentation***

<b><i>Period</i></b>	<b><i>Thresholds*</i></b>
<b><i>Apr 1 - Apr 15</i></b>	<b><i>20,500 cfs</i></b>
<b><i>Apr 16 - Apr 30</i></b>	<b><i>17,800 cfs</i></b>
<b><i>May 1 - May 31</i></b>	<b><i>15,000 cfs</i></b>
<b><i>June 1 - June 15</i></b>	<b><i>13,000 cfs</i></b>
<b><i>June 16 - June 30</i></b>	<b><i>8,700 cfs</i></b>

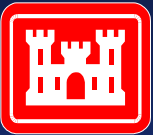
***\* Weekly Average flows; may be scaled back  
during dry years***



# ***Spring Flow Augmentation Targets***

- ***Supports juvenile steelhead and adult chinook migration***
- ***Studies by ODFW show increased survival under higher spring flows***
- ***Requested by National Marine Fisheries Service in their Draft Biological Opinion***





# ***Willamette Reservoir Projects***

## ***Conservation Season Operating Criteria***

- ***Minimum Instream Flows***
- ***Spring Flow Augmentation; Apr - June***
- ***Mainstem Flow Augmentation; Jul -Oct***
- ***Water for Out-of-Stream Needs***
- ***Refill and Drawdown Priorities***
- ***Special Operations***



# ***Mainstem Flow Augmentation for Fish Habitat & Water Quality***

***(July - October)***

- ***Albany - 5,000 cubic feet per second (cfs)***
- ***Salem - 6,500 cfs***



# ***Willamette Reservoir Projects***

## ***Conservation Season Operating Criteria***

- ***Minimum Instream Flows***
- ***Spring Flow Augmentation; Apr - June***
- ***Mainstem Flow Augmentation; Jul - Oct***
- ***Water for Out-of-Stream Needs***
- ***Refill and Drawdown Priorities***
- ***Special Operations***



# ***Out-of-Stream Uses of Stored Water***

- *60,000 Acre Feet for Irrigation*
- *Most comes out of Fern Ridge Lake for farms along the Long Tom River*
- *Currently no municipal and industrial use*



# ***Willamette Reservoir Projects***

## ***Conservation Season Operating Criteria***

- ***Minimum Instream Flows***
- ***Spring Flow Augmentation; Apr - June***
- ***Mainstem Flow Augmentation; Jul - Oct***
- ***Water for Out-of-Stream Needs***
- ***Drawdown Priorities***
- ***Special Operations***



# ***Reservoir Drawdown Priorities (April -October)***

- |                |                                       |
|----------------|---------------------------------------|
| <i>First:</i>  | Lookout Point                         |
| <i>Second:</i> | Green Peter                           |
| <i>Third:</i>  | Hills Creek                           |
| <i>Fourth:</i> | Blue River                            |
| <i>Fifth:</i>  | Fall Creek, Cottage Grove,<br>Dorena, |
| <i>Last:</i>   | Fern Ridge, Foster, Detroit           |

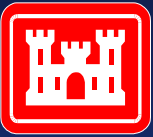
\*No storage in Cougar Reservoir from 2002 – 2004; Drawdown began in April 2002



# ***Willamette Reservoir Projects***

## ***Conservation Season Operating Criteria***

- ***Minimum Instream Flows***
- ***Spring Flow Augmentation; Apr - June***
- ***Mainstem Flow Augmentation; Jul - Oct***
- ***Water for Out-of-Stream Needs***
- ***Drawdown Priorities***
- ***Special Operations***



# ***Special Operations in 2003***

- ***Cougar Temperature Control Project***
  - ✓ *No reservoir storage through 2004*
  - ✓ *Delay drawdown at Blue River for recreation and turbidity control*
- ***Reduced mainstem flow targets in response dry conditions***





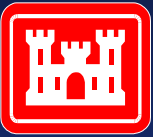
# ***2003 Mainstem Flow Targets***

## ***(cubic feet per second at Salem)***

<b><i>Time Period</i></b>	<b><i>Normal Flow Objectives</i></b>	<b><i>Planned 2003 Flow Objectives</i></b>	<b><i>2001 Drought Year Objectives</i></b>
<b><i>Apr 1-15</i></b>	<b><i>20,500</i></b>	<b><i>19,200</i></b>	<b><i>15,000</i></b>
<b><i>Apr 16-30</i></b>	<b><i>17,800</i></b>	<b><i>17,100</i></b>	<b><i>15,000</i></b>
<b><i>May 1-31</i></b>	<b><i>15,000</i></b>	<b><i>15,000</i></b>	<b><i>15,000</i></b>
<b><i>June 1-15</i></b>	<b><i>13,000</i></b>	<b><i>12,500</i></b>	<b><i>11,000</i></b>
<b><i>June 16-30</i></b>	<b><i>8,700</i></b>	<b><i>8,000</i></b>	<b><i>5,500</i></b>
<b><i>July 1-31</i></b>	<b><i>6,000</i></b>	<b><i>5,800</i></b>	<b><i>5,000</i></b>
<b><i>Aug 1-15</i></b>	<b><i>6,000</i></b>	<b><i>5,800</i></b>	<b><i>5,000</i></b>
<b><i>Aug 16-31</i></b>	<b><i>6,500</i></b>	<b><i>6,200</i></b>	<b><i>5,000</i></b>
<b><i>Sept 1-30</i></b>	<b><i>7,000</i></b>	<b><i>6,500</i></b>	<b><i>5,000</i></b>
<b><i>Oct 1-31</i></b>	<b><i>7,000</i></b>	<b><i>6,500</i></b>	<b><i>5,000</i></b>



# ***Reservoir and Flow Forecasts for 2003***

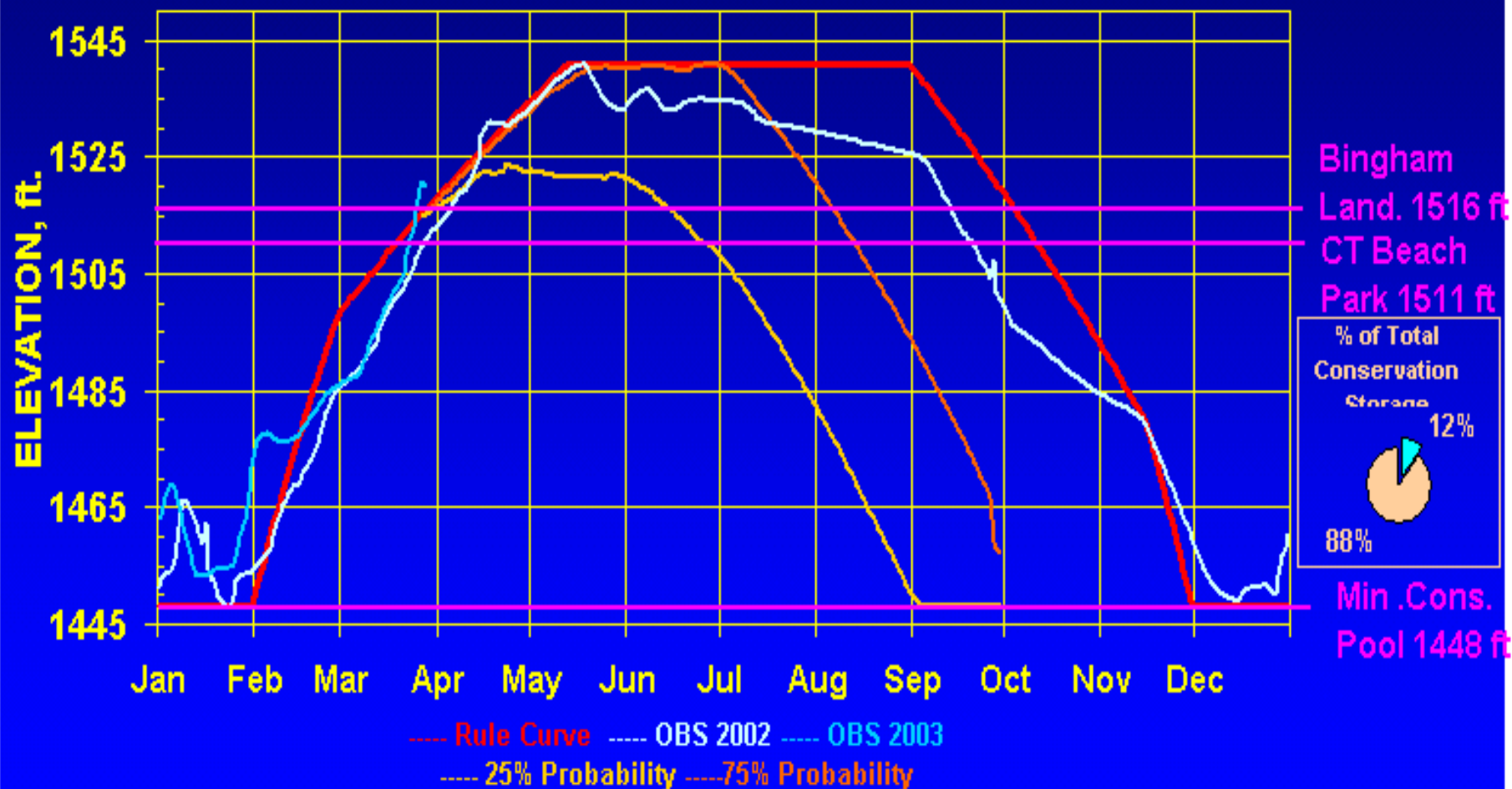


# ***HEC-5 MODEL***

- ***Corps of Engineers model used to forecast reservoir elevations and flows***
- ***Uses a Water Supply Forecast provided by NRCS (Mar. Fcst – 70% of average, Mar- Sep)***
- ***Forecast Elevations shown are presented as probability bands***
- ***Model uses 65 years of record***
- ***Elevations are a function of the water supply, meeting mainstem targets and other requirements. They are only an estimate.***

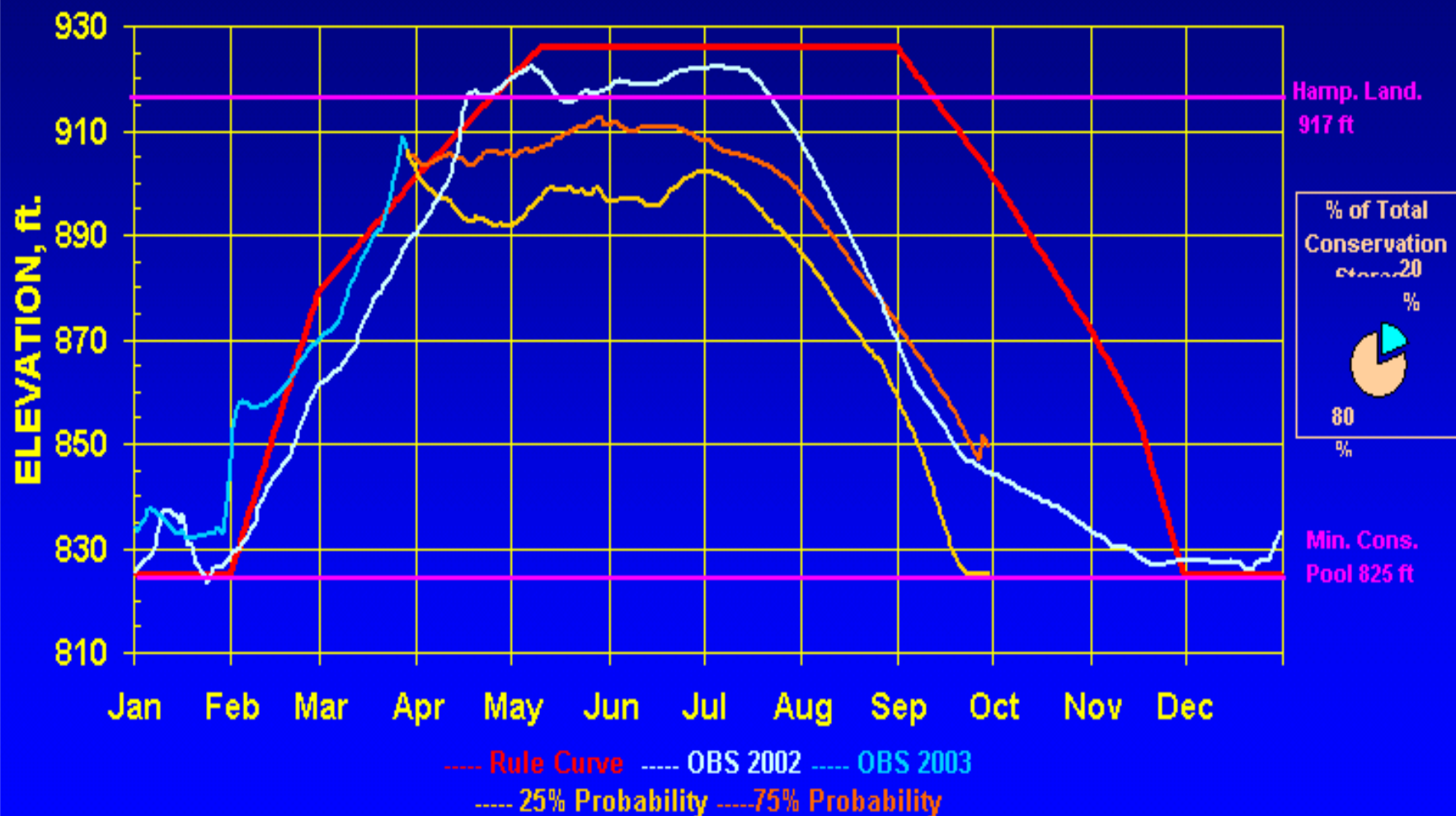


## HILLS CREEK Lake Elevation Forecast Summary for 2003



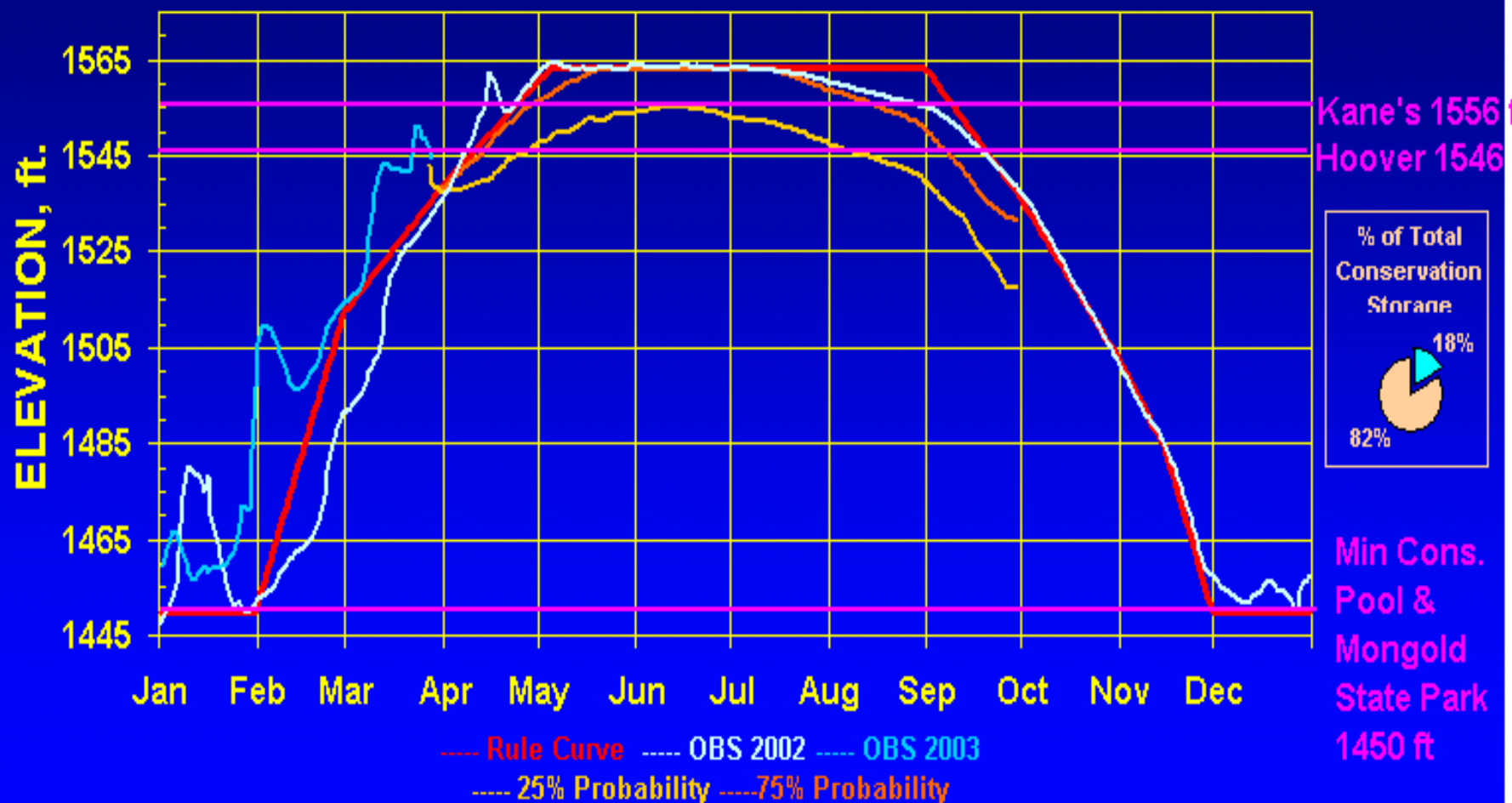


## LOOKOUT POINT Lake Elevation Forecast Summary for 2003



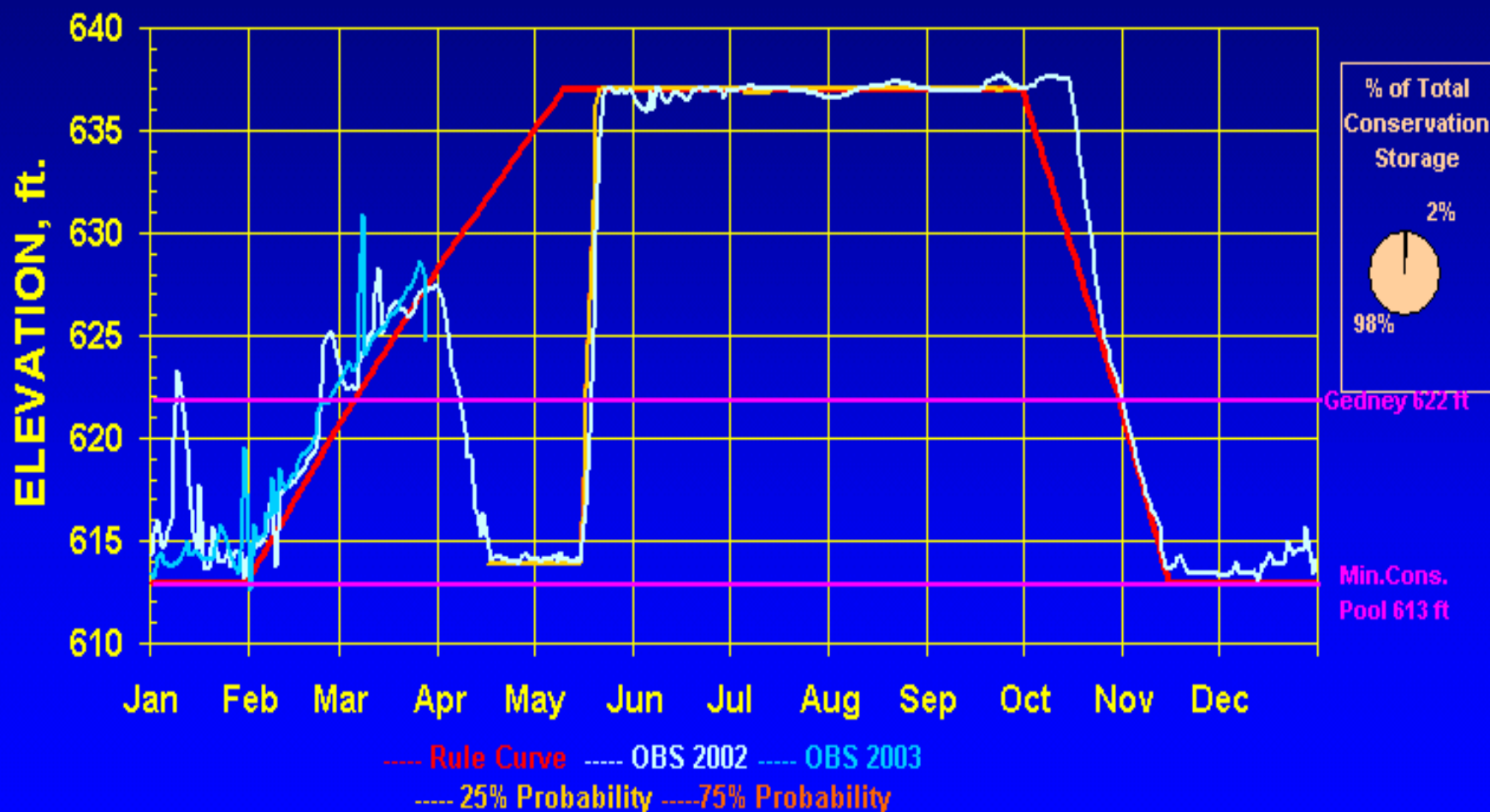


## DETROIT Lake Elevation Forecast Summary for 2003



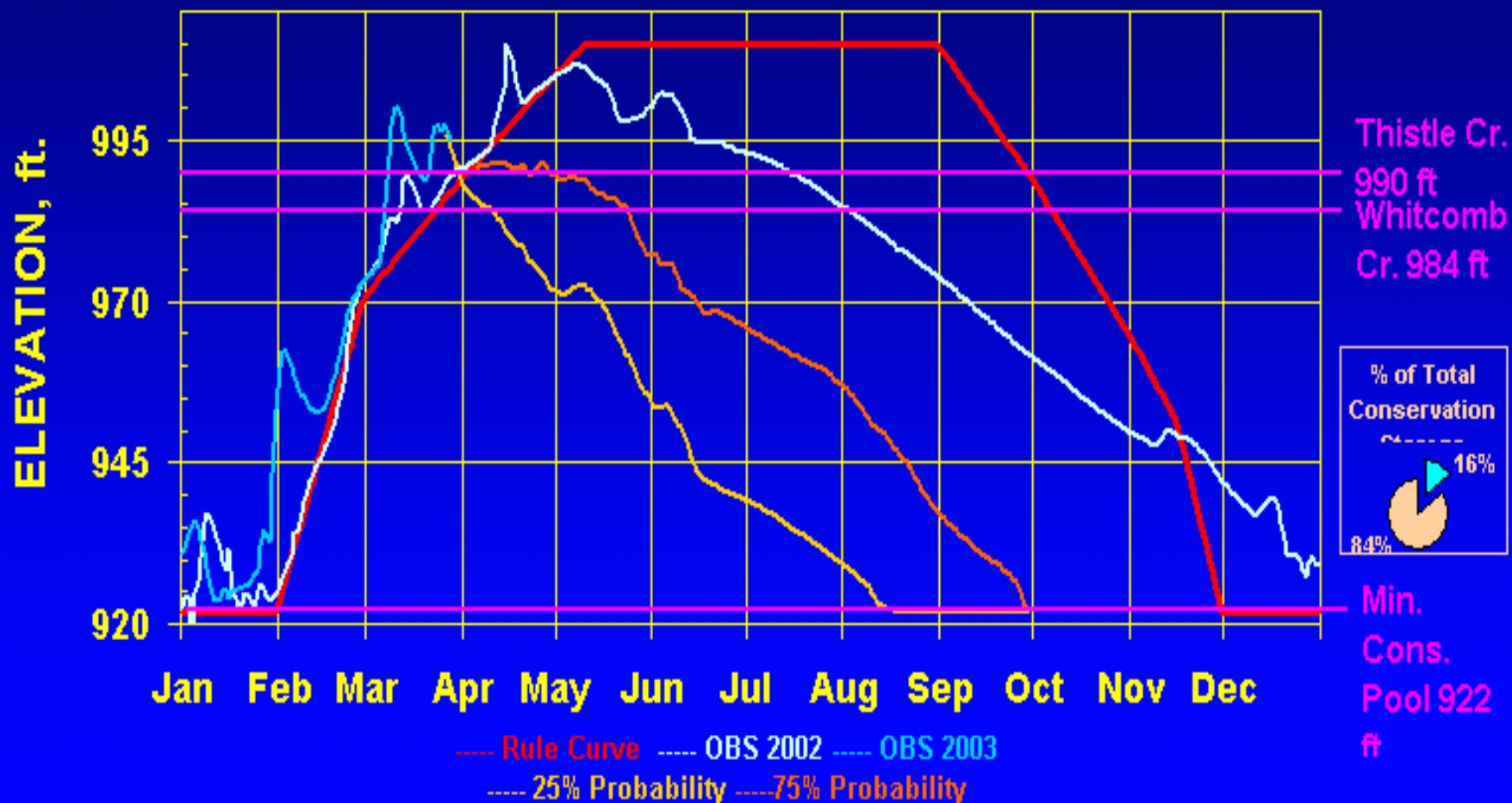


## FOSTER Lake Elevation Forecast Summary for 2003





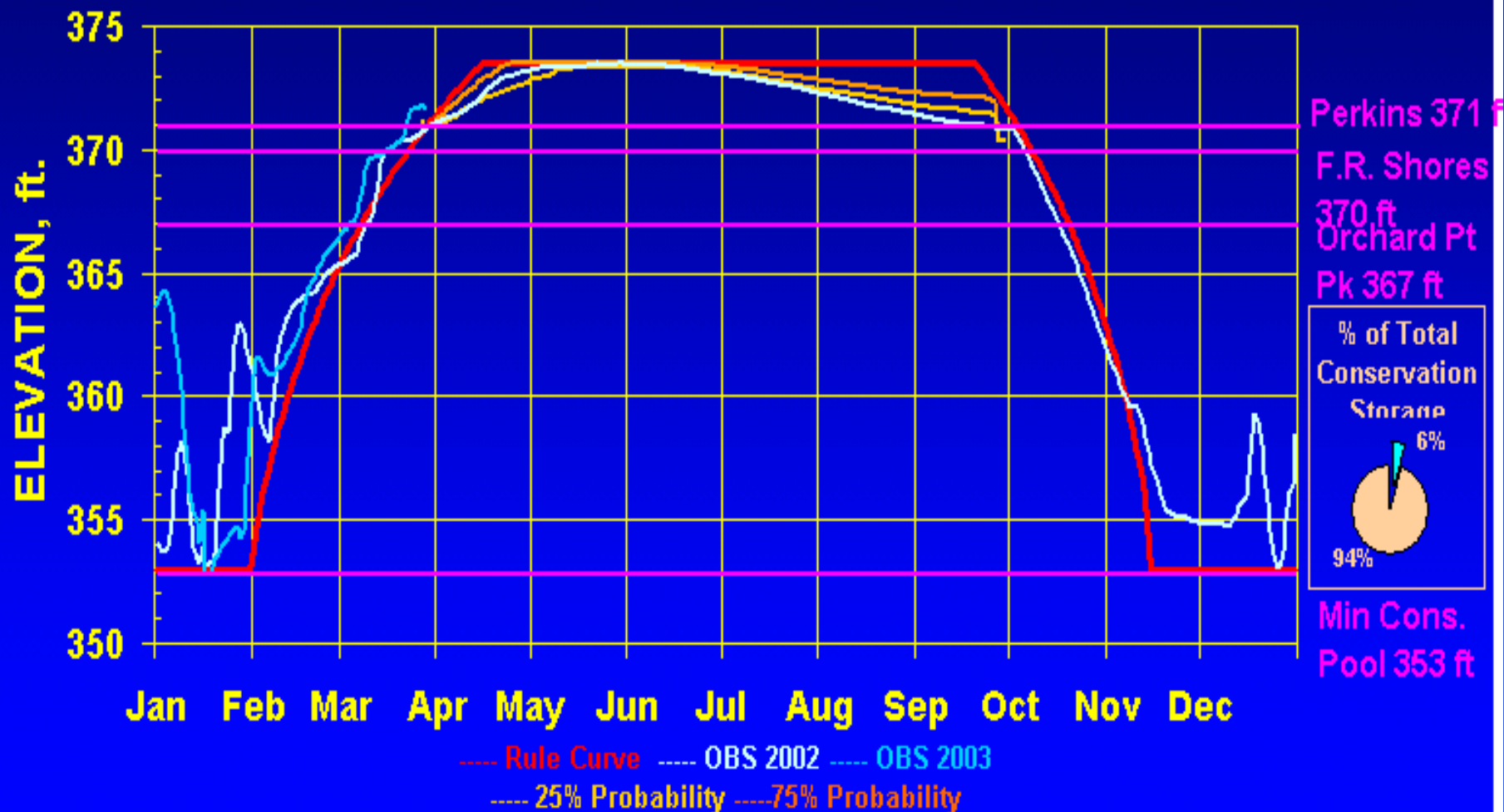
## GREEN PETER Lake Elevation Forecast Summary for 2003





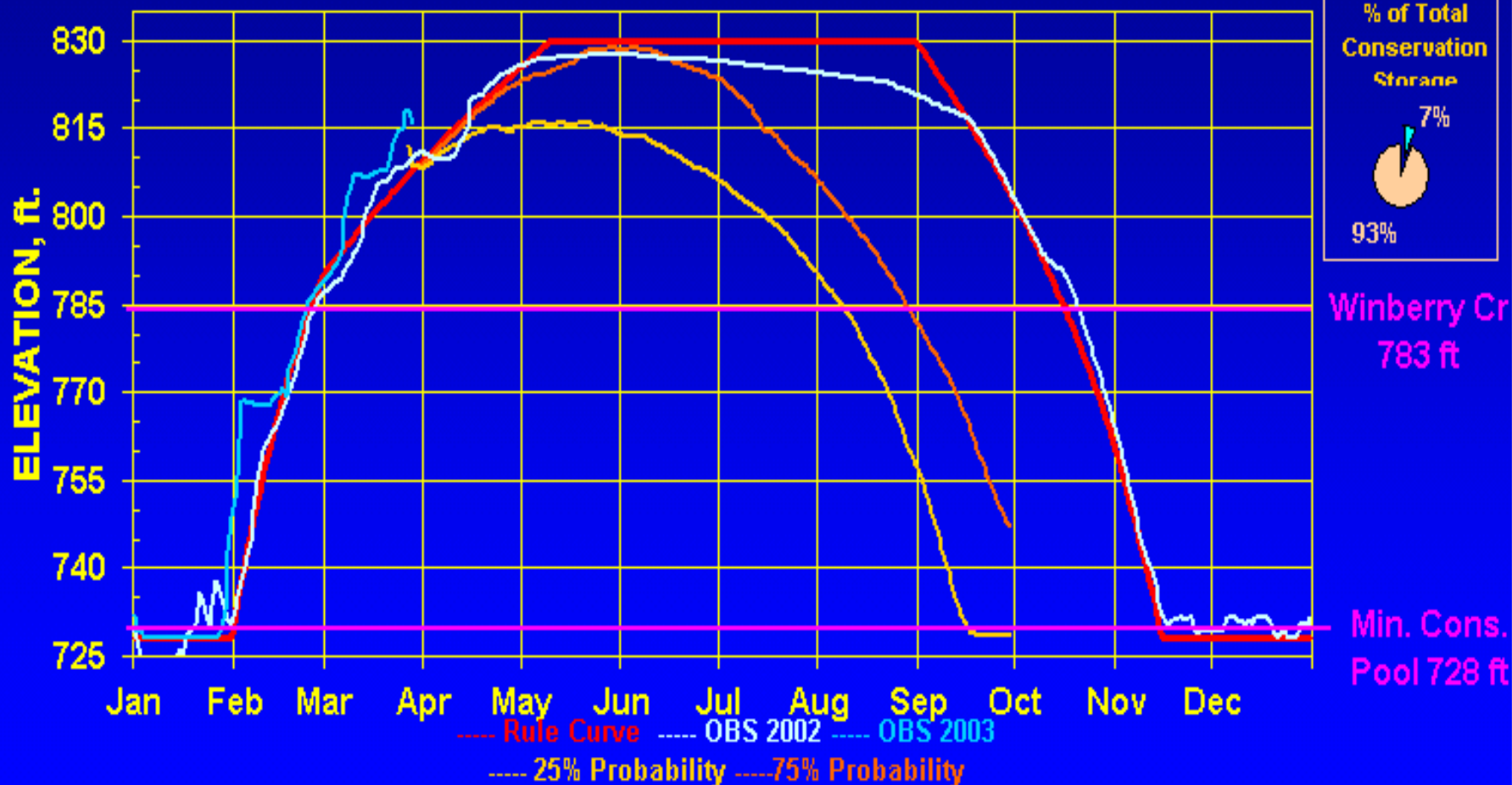


## FERN RIDGE Lake Elevation Forecast Summary for 2003



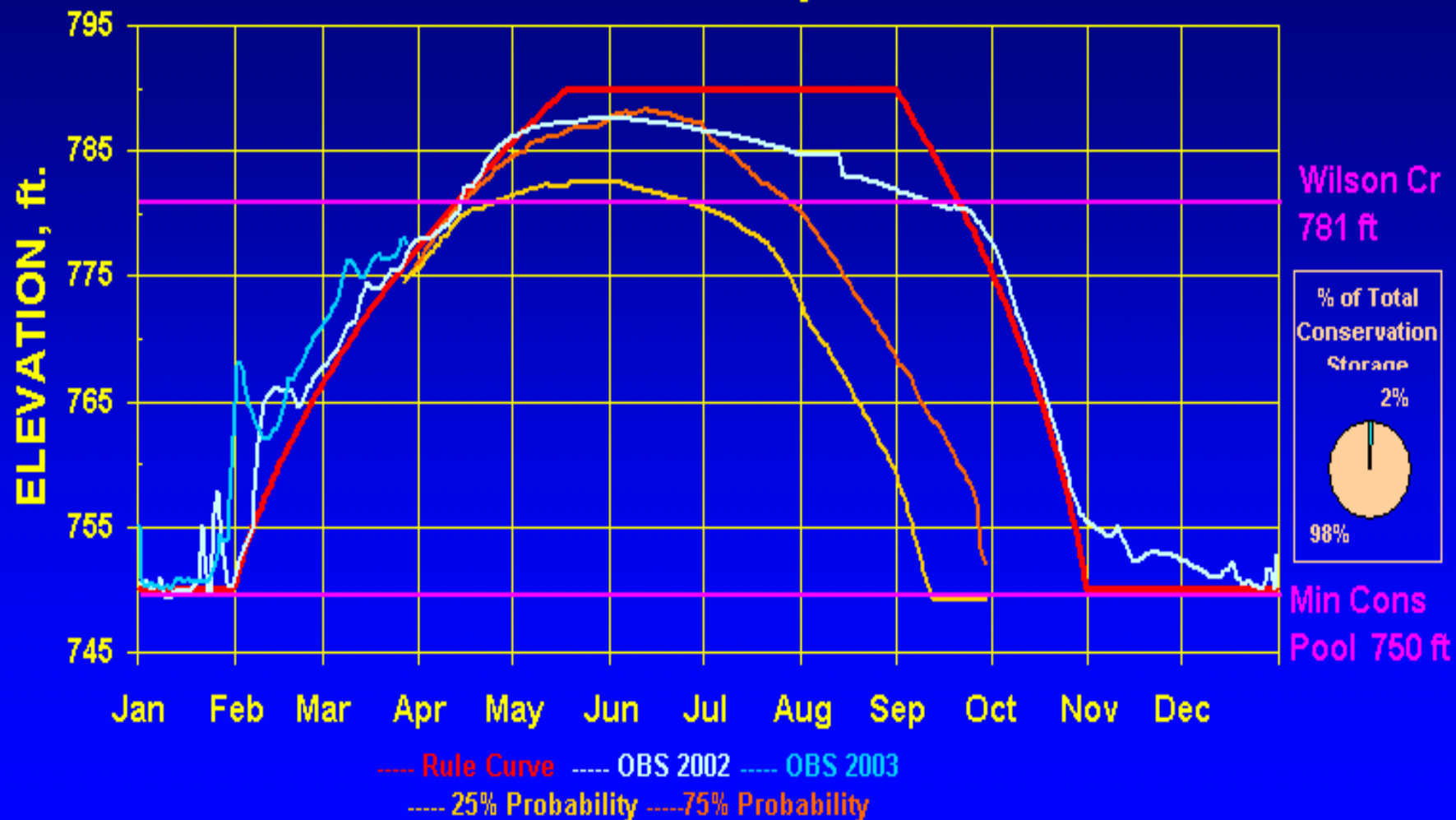


## FALL CREEK Lake Elevation Forecast Summary for 2003



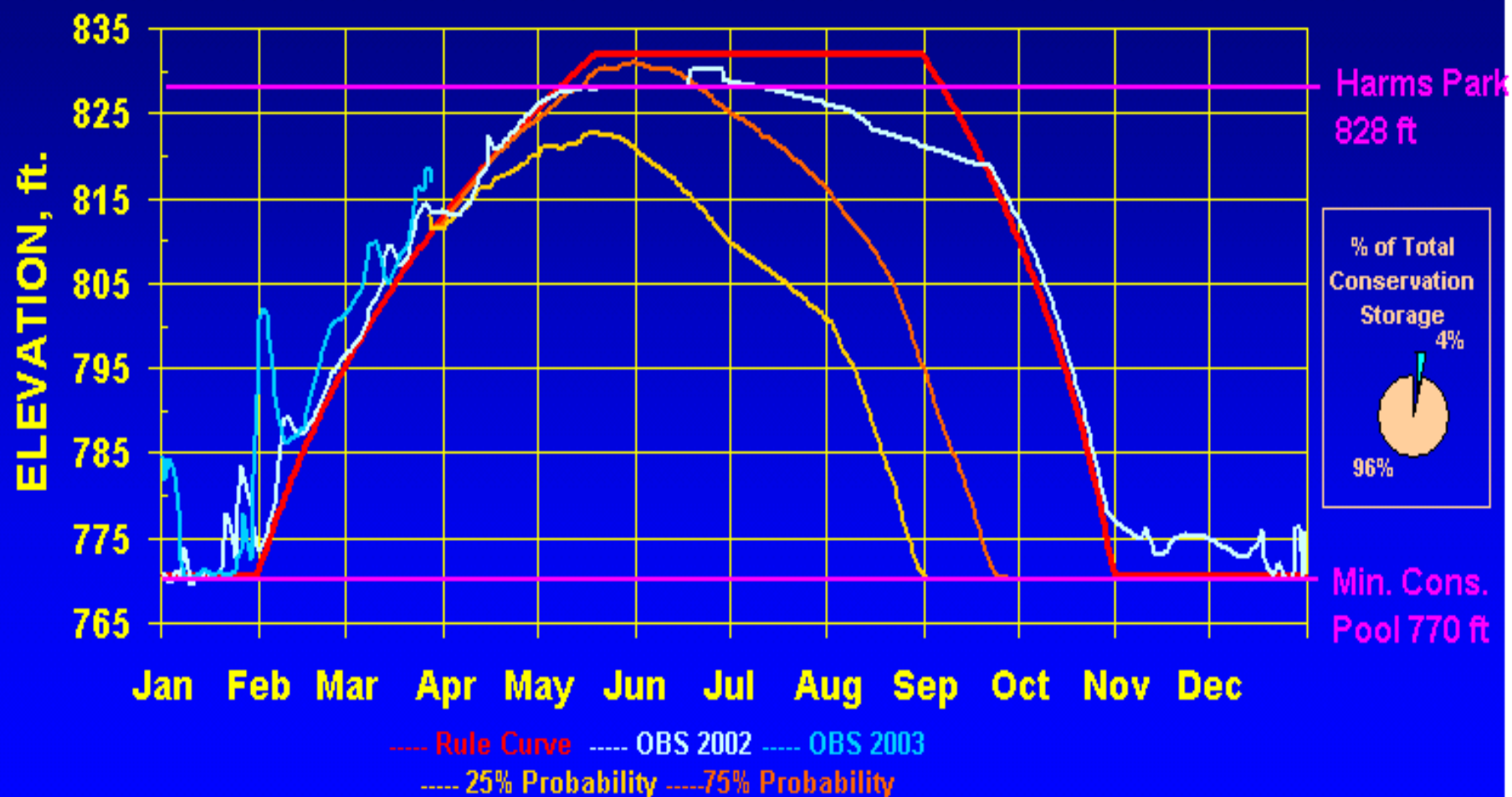


## COTTAGE GROVE Lake Elevation Forecast Summary for 2003



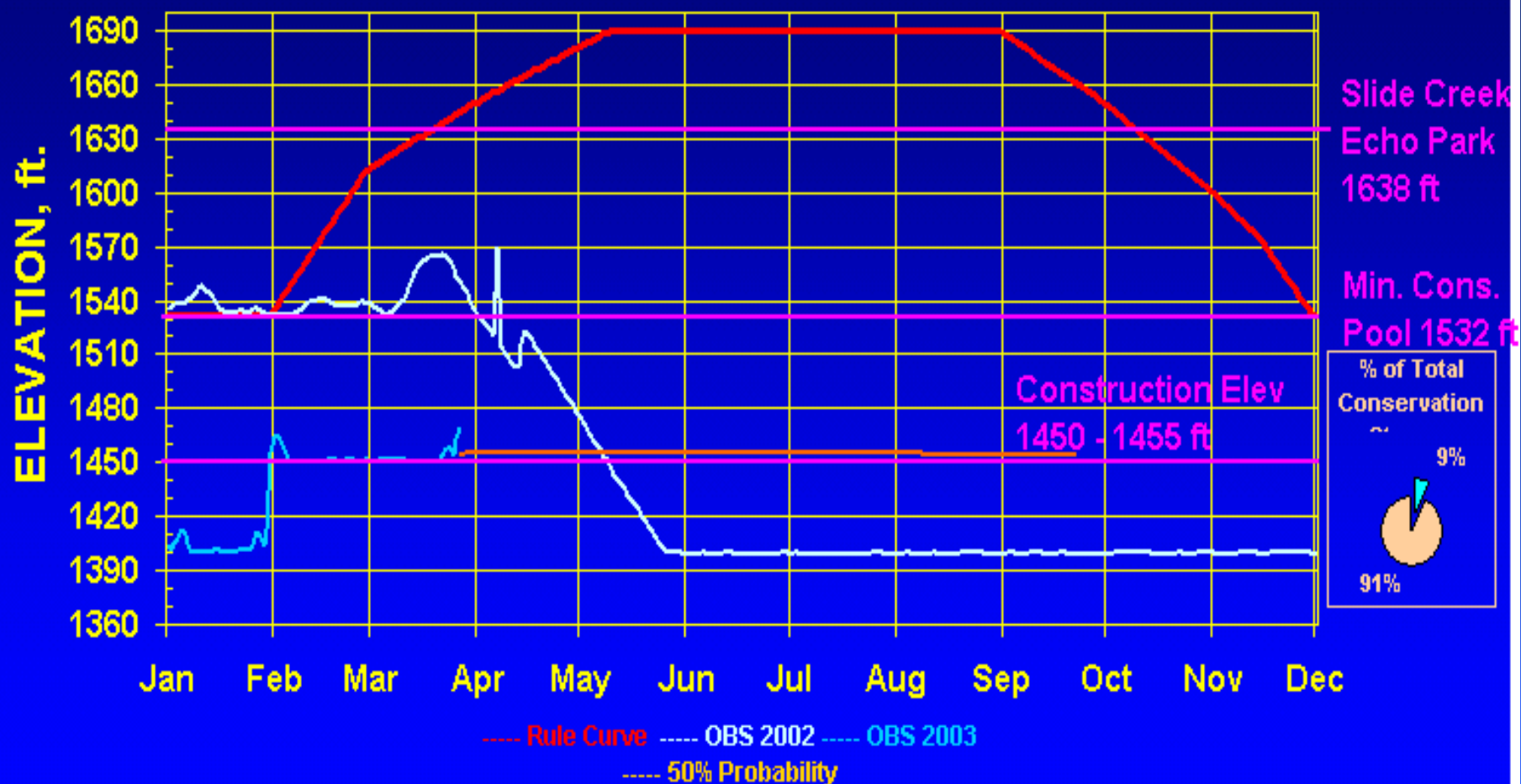


## DORENA Lake Elevation Forecast Summary for 2003



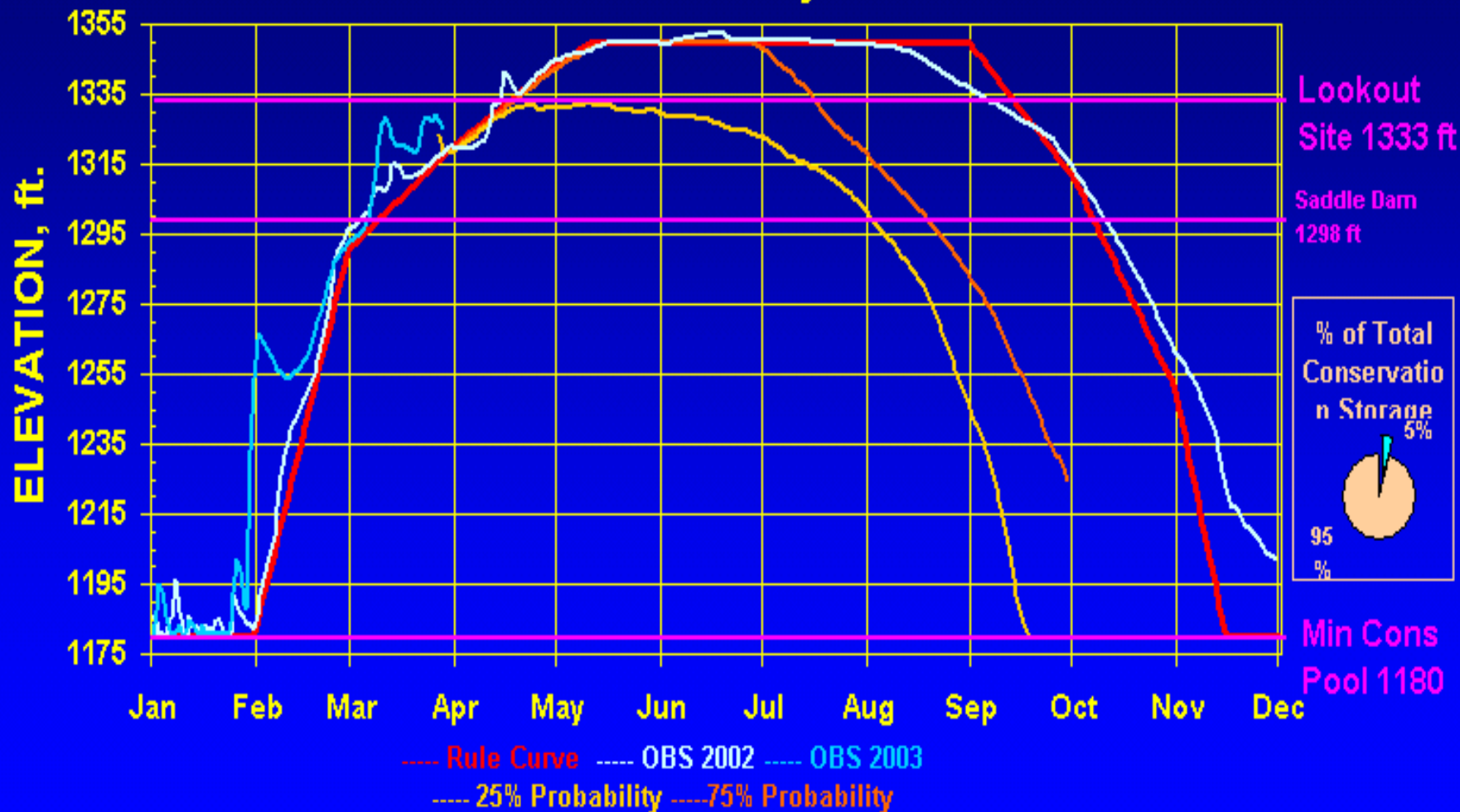


## COUGAR Lake Elevation Forecast Summary for 2003





## BLUE RIVER Lake Elevation Forecast Summary for 2003

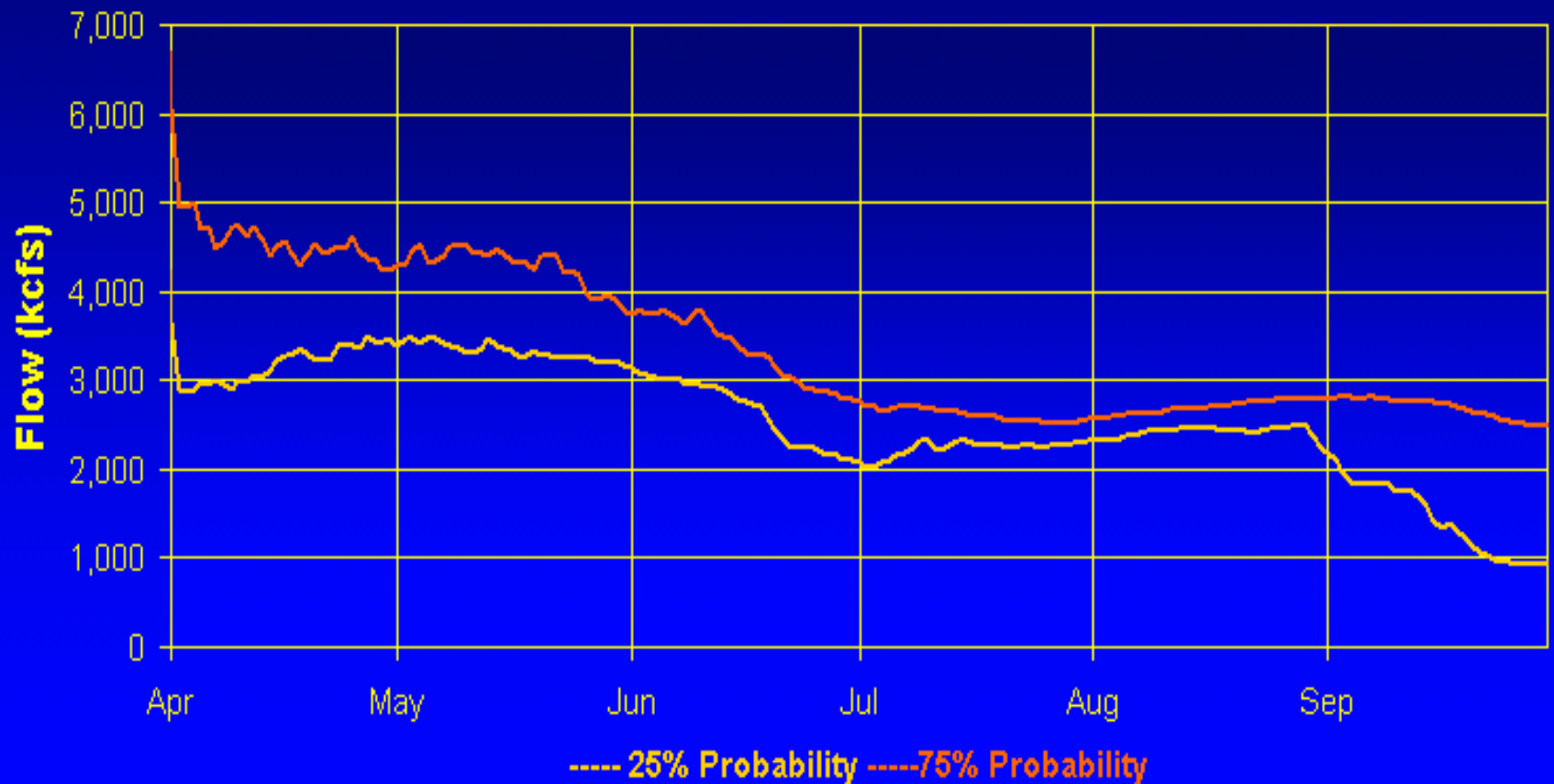






# ***Forecasted Flows for the Coming Months:***

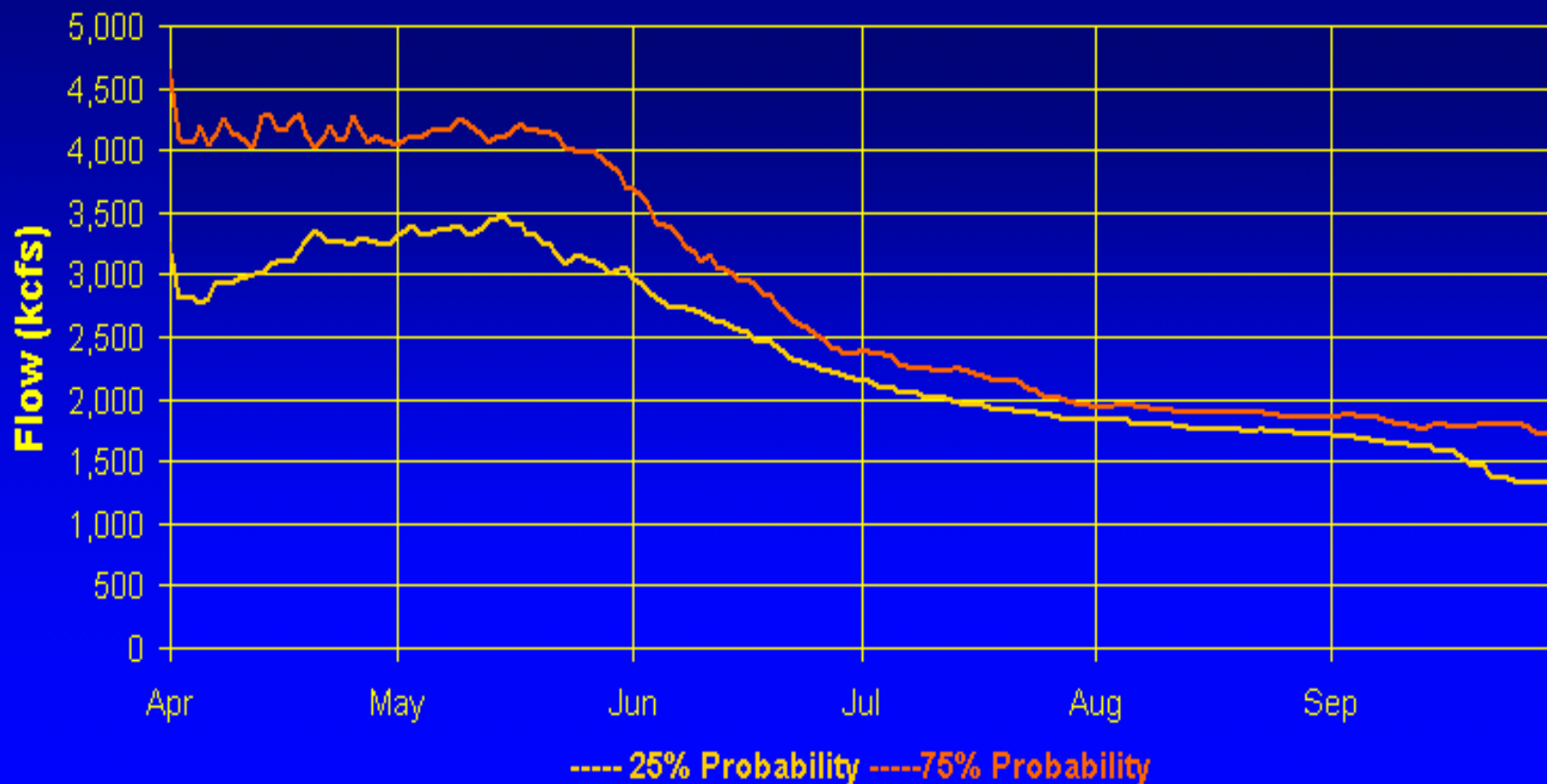
## **SPRINGFIELD FLOW Forecast Summary for 2003**





## *McKenzie River at Vida:*

### VIDA FLOW Forecast Summary for 2003

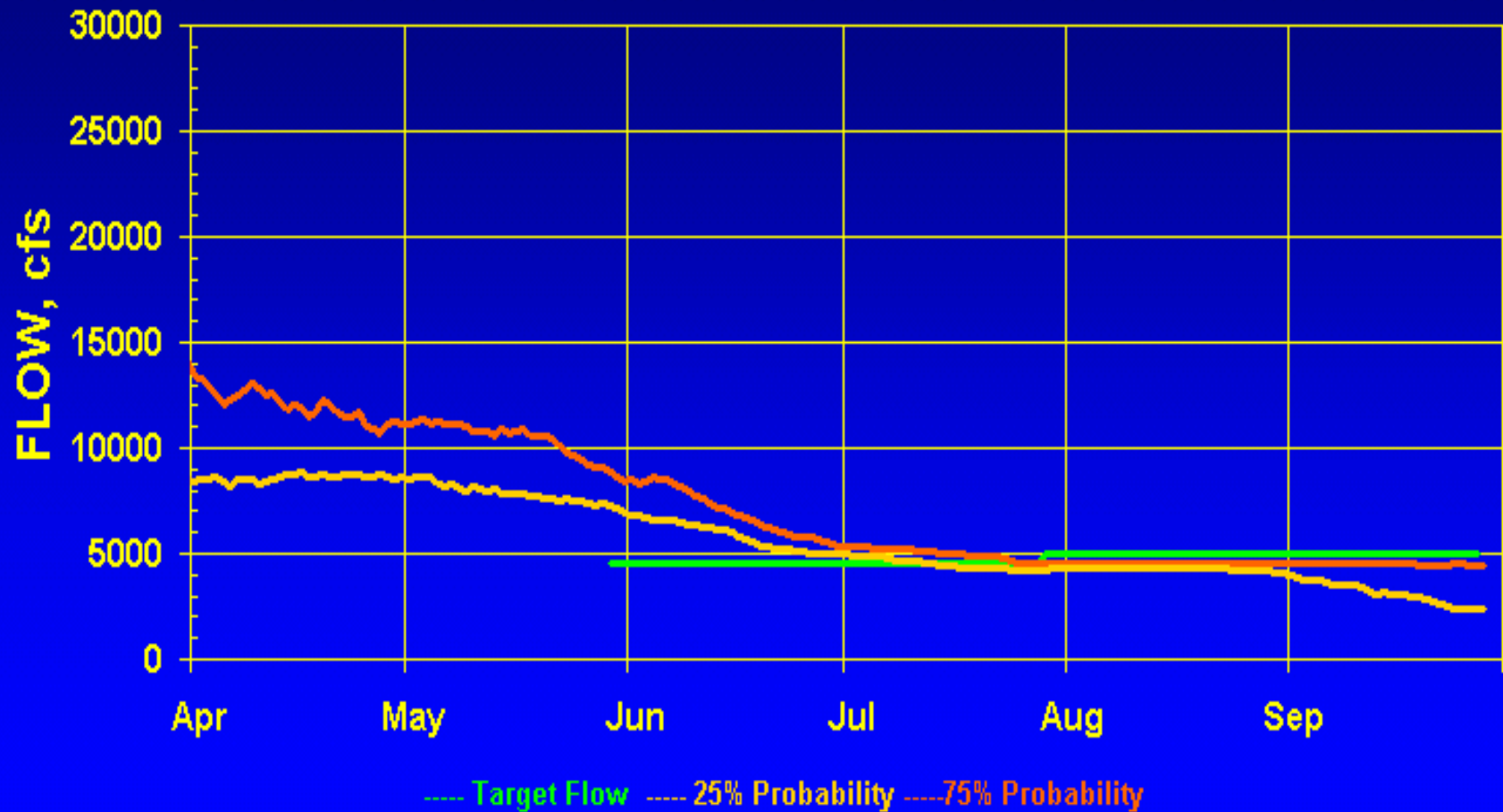






## *Forecasted Flow at Albany:*

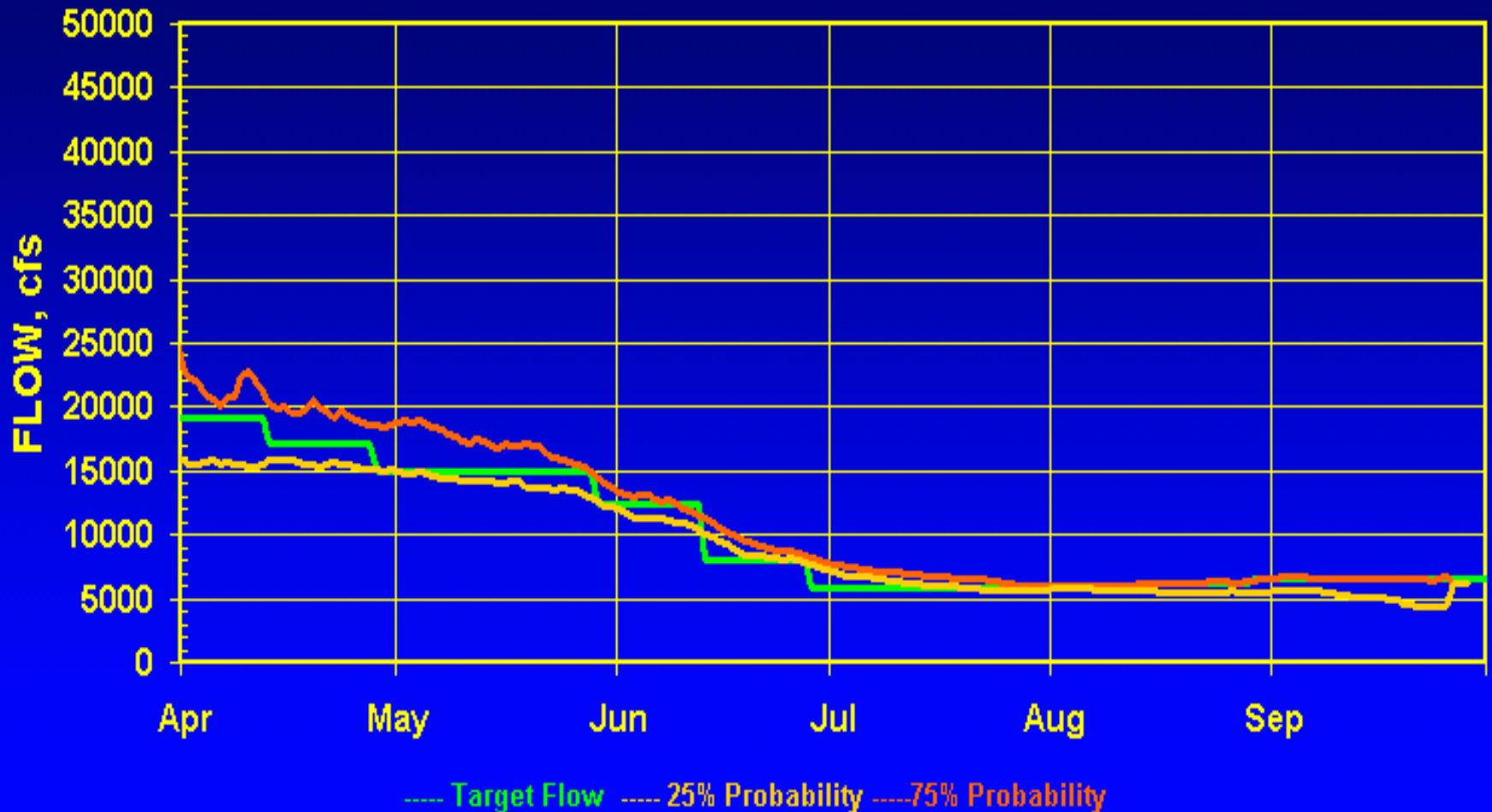
**WILLAMETTE RIVER AT ALBANY**  
**Forecast Summary Hydrograph for 2003**





## *Forecasted Flow at Salem:*

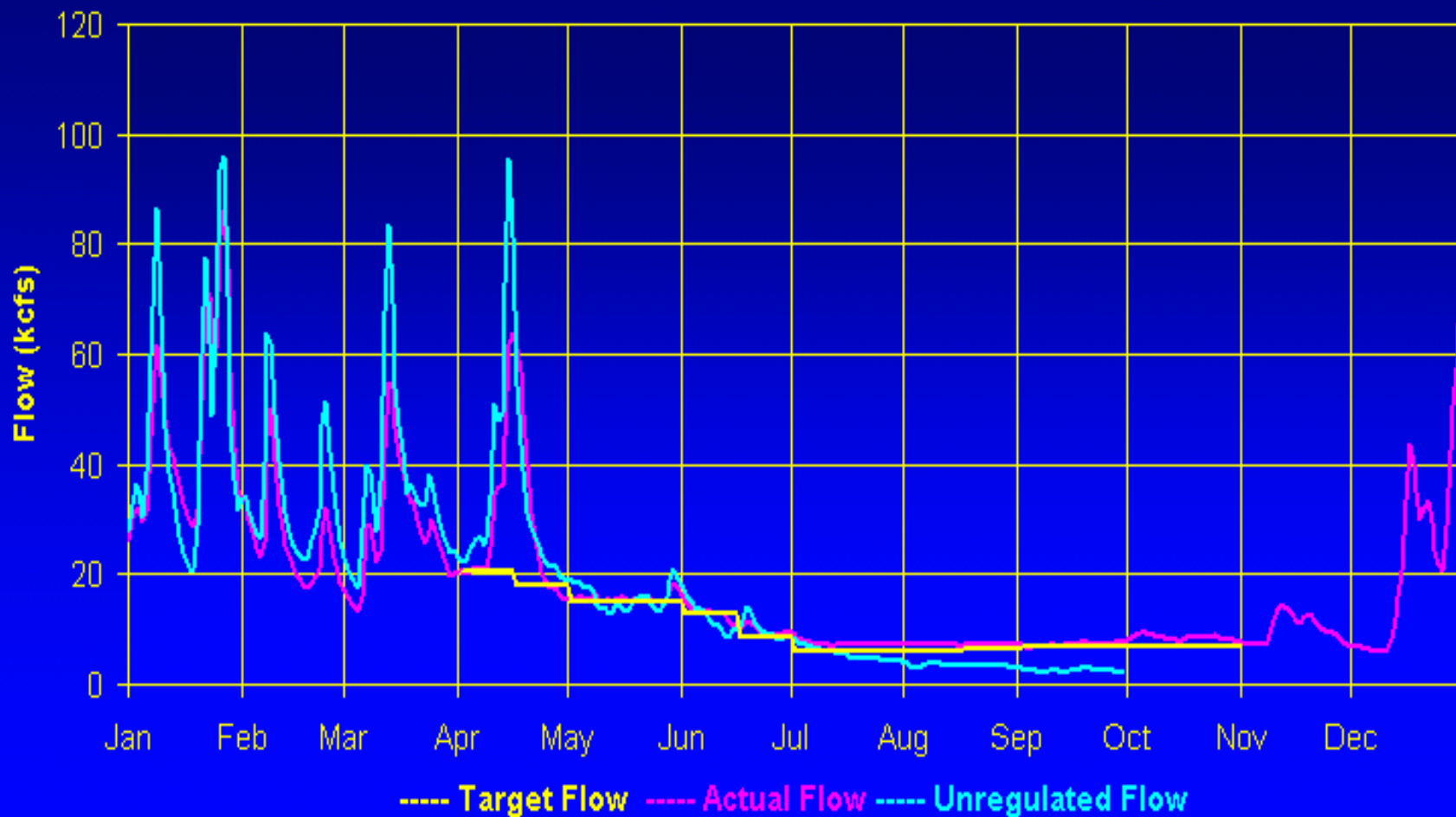
**WILLAMETTE RIVER AT SALEM**  
**Forecast Summary Hydrograph for 2003**





## *Flows at Salem last year*

**SALEM FLOW 2002**





***For more information:  
[http://www.  
nwd-wc.usace.army.mil/nwp/](http://www.nwd-wc.usace.army.mil/nwp/)***



US Army Corps  
of Engineers  
Portland District

Reservoir Regulation  
& Water Quality Section

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This is the home page for the U.S. Army Corps of Engineers' Portland District Reservoir Regulation & Water Quality Section. This office is responsible for monitoring and regulating the Willow Creek and Rogue Basins.

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## NEWS

**New**

**Presentation** about the Willamette River Low Water Situation.